COURSE DESCRIPTION CARD - SYLLABUS

Course name
Concurrent engineering [S2MiBM2>PW2]

Course

Field of study
Mechanical Engineering

Year/Semester
1/2

Area of study (specialization)
Virtual Engineering Design

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
30

Number of credit points

2,00

Coordinators

dr inż. Łukasz Bernat
lukasz.bernat@put.poznan.pl

Lecturers

Prerequisites

The student has basic knowledge of the learning outcomes intended for students of Mechanical Engineering at the first stage of studies. In particular, he is aware of the role and importance of construction processes and technologies for the field of mechanics and machine construction. Has the ability to think logically and use information obtained from the library and the Internet. Understands the need to learn and acquire new knowledge.

Course objective

The aim of the course is to present the methodology of parallel and integrated production design.

Course-related learning outcomes

Knowledge:
1. The student has knowledge of modeling supporting the design of machines and IT systems supporting the design of machines. Has detailed knowledge in creating technical documentation.
2. The student has knowledge of engineering materials.
3. The student has knowledge of the design of technological processes.
4. The student knows the principles of concurrent design. Is able to determine the advantages of the

concurrent engineering method.

Skills:
1. The student is able to select the appropriate material for a given design task.
2. The student is able to develop and model a product by selecting appropriate IT tools for the design task.
3. The student is able to design a production process for a selected product.
4. The student is able to obtain data from literature and other sources in order to solve a complex and unusual problem.
5. The student is able to make a preliminary economic analysis of the proposed solutions.
6. The student is able to communicate within a team, with subordinates and superiors; is able to manage the work of a team.

Social competences:
The student understands the need for lifelong learning and is able to inspire the learning process of other people. The student is aware of cooperation with the socio-economic environment. The student is able to act in an entrepreneurial manner.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Assessment of a completed project by a group of students. Participation in the discussion regarding the assumptions and method of project implementation will have an impact on the final grade.

Programme content

Concurrent design: origins and definition. Characteristics. Time and costs in concurrent design. Principles of concurrent design. Selection of the design team. Comparison of concurrent engineering with the traditional (sequential) product implementation process. Planning and selected scheduling methods. During classes, students prepare presentations covering subsequent stages of the design process (assumptions and concept, preliminary design, 3D model, structural design, technological design).
Design tasks (design of a selected product):
- development of the project schedule,
- selection of the project team,
- development of design assumptions,
- development of the product concept,
- selection of the optimal concept (verification of design assumptions),
- design development,
- design optimization and verification,
- technology development,

Optional:
- production of the product,
- verification of design assumptions.

Course topics

Practical skills in modelling and simulation of casting and manufacturing plastic components.

Teaching methods

Case study. Multimedia presentations. Discussion.

Bibliography

Basic:
1. Szatkowski K., Przygotowanie produkcji. Warszawa: Wydawnictwo Naukowe PWN, 2008.
2. Feld M., Projektowania procesów technologicznych typowych części maszyn, WNT, Warszawa 2003.
3. Chlebus E., Techniki komputerowe CAx w inżynierii produkcji, WNT, 2000

Additional:
1. Malesa W., Korzybski W., Zastosowanie technologii internetowych w projektowaniu współbieżnym,

2. Individually selected

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00